

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Currently Amended) A transmission device for generating an alternating magnetic field, the alternating magnetic field extending from outside of a human's or animal's body into the human's or animal's body when the transmission device is placed at a surface of the human's or animal's body, the alternating magnetic field influencing a receiver implantable in the human's or animal's body, the receiver, when implanted in the human's or animal's body and the transmission device is placed at the surface of the human's or animal's body, drawing energy from the alternating magnetic field for supplying energy to an implantable energy consuming implant when implanted in the human's or animal's body, the transmission device comprising:

a coil for generating the alternating magnetic field extending from outside of the human's or animal's body into the human's or animal's body, the coil extending longitudinally between a front end to be directed towards the receiver and a rear end to be directed away from the receiver when the transmission device is placed at the surface of the human's or animal's body, and

a shield for shielding an environment outside of the human's or animal's body from the alternating magnetic field generated by the coil by surrounding the coil, except at least the front end of the coil so that the alternating magnetic field extends out of the front end and towards the receiver when the front end of the coil is directed towards the receiver, the shield including a magnetizable core extending inside of the coil and a magnetizable casing integrated with the core and surrounding the rear end of the coil and the circumference of the coil along at least a portion of the longitudinal extension of the coil,

wherein the magnetizable casing comprises a circular cylindrical wall and a circular gable wall joined to the cylindrical wall, the magnetizable core extends centrally

in the cylindrical wall from the gable wall, and the coil is applied on the magnetizable core with the rear end of the coil facing the gable wall, and
wherein the shield is made of ferrite.

2. (Previously Presented) The transmission device according to claim 1, wherein the magnetizable casing completely surrounds the coil, except for the front end of the coil.

3. (Currently Amended) The transmission device according to claim 2, wherein the magnetizable core wholly extends along the longitudinal extension of the coil.

4. (Currently Amended) The transmission device according to claim 1, wherein the magnetizable casing surrounds the circumference of the coil along a portion of the longitudinal extension of the coil.

5. (Currently Amended) The transmission device according to claim 4, wherein the core extends past the magnetizable casing along the longitudinal extension of the coil, as seen in the direction towards the front end of the coil.

6. (Cancelled)

7. (Previously Presented) The transmission device according to claim 6, wherein the cylindrical wall includes cut-outs.

8. (Cancelled)

9. (Previously Presented) The transmission device according to claim 1, further comprising a plastic box, in which the coil and shield are arranged such that they are

located at a distance, in the order of centimeters, from an operator's hand, when the operator holds the transmission device during operation.

10. (Currently Amended) Apparatus for wirelessly transferring energy from outside a human's or animal's body into the human's or animal's body to an implantable energy consuming medical device when implanted in the human's or animal's body, the apparatus comprising:

a transmission device operable from outside the human's or animal's body for generating an alternating magnetic field, and

a receiver implantable in the human's or animal's body for receiving and drawing energy from the alternating magnetic field for supplying energy to the implantable energy consuming medical device,

the transmission device including:

at least one coil for generating outside the human's or animal's body the alternating magnetic field for supplying energy to the implantable energy consuming medical device when implanted in the human's or animal's body, said at least one coil extending longitudinally between a front end to be directed towards the receiver and a rear end to be directed away from the receiver when the receiver is implanted in the human's or animal's body and the transmission device is placed at a surface of the human's or animal's body, and

at least one shield for shielding an environment outside of the human's or animal's body from the alternating magnetic field generated by said at least one coil, except at least the front end of said at least one coil, so that the alternating magnetic field extends out of the front end and towards the receiver when the front end of said at least one coil is directed towards the receiver, the shield including a magnetizable core extending inside of said at least one coil and a magnetizable casing integrated with the magnetizable core and surrounding the rear end of said at least one coil and the

circumference of said at least one coil along at least a portion of the longitudinal extension of said at least one coil,

wherein the magnetizable casing comprises a circular cylindrical wall and a circular gable wall joined to the cylindrical wall, the magnetizable core extends centrally in the cylindrical wall from the gable wall, and the coil is applied on the magnetizable core with the rear end of the coil facing the gable wall, and
wherein the shield is made of ferrite.

11. (Currently Amended) Apparatus for wirelessly transferring energy from outside a human's or animal's body into the human's or animal's body to an implantable energy consuming medical device when implanted in the human's or animal's body, the apparatus comprising:

a transmission device operable from outside the human's or animal's body for generating an alternating magnetic field, the transmission device comprising a first transmitter and a second transmitter, and

a receiver implantable in the human's or animal's body for drawing energy from the alternating magnetic field for supplying energy to the implantable energy consuming medical device,

the first and second transmitters including:

first and second coils, respectively, for generating respective alternating magnetic fields in two different directions towards the receiver, each of the first and second coils extending longitudinally between a front end of the respective coil to be directed towards the receiver and a rear end of the respective coil to be directed away from the receiver when the receiver is implanted in the human's or animal's body and the respective transmitter is placed at a surface of the human's or animal's body, and

first and second shields, respectively, for shielding an environment outside of the human's or animal's body from the generated alternating magnetic fields by surrounding the respective coil, except at least the front end of the respective coil, so that

the respective generated alternating magnetic field extends out of the front end of the respective coil and towards the receiver when the front end of the respective coil is directed towards the receiver, each of the first and second shields including a magnetizable core extending inside of the coil of the respective first or second transmitter and a magnetizable casing integrated with the magnetizable core and surrounding the rear end of the coil and the circumference of the coil along at least a portion of the longitudinal extension of the coil,

wherein the magnetizable casing comprises a circular cylindrical wall and a circular gable wall joined to the cylindrical wall, the magnetizable core extends centrally in the cylindrical wall from the gable wall, and the coil is applied on the magnetizable core with the rear end of the coil facing the gable wall, and

wherein the shield is made of ferrite.

12. (Currently Amended) The apparatus according to claim 10, wherein the magnetizable casing completely surrounds the coil except the front end thereof.

13. (Currently Amended) The apparatus according to claim 12, wherein the magnetizable core wholly extends along the longitudinal extension of the coil.

14. (Currently Amended) The apparatus according to claim 10, wherein the magnetizable casing surrounds the circumference of the coil along a portion of the longitudinal extension of the coil.

15. (Currently Amended) The apparatus according to claim 14, wherein the magnetizable core extends past the magnetizable casing along the longitudinal extension of the coil, as seen in the direction towards the front end of the coil.

16. (Currently Amended) The apparatus according to claim 10, wherein the magnetizable casing comprises a circular cylindrical wall and a circular gable wall joined to the cylindrical wall, the magnetizable core extends centrally in the cylindrical wall from the gable wall and the coil is applied on the magnetizable core with the rear end of the coil facing the gable wall.

17. (Previously Presented) The apparatus according to claim 16, wherein the cylindrical wall is provided with cut-outs.

18. (Previously Presented) The apparatus according to claim 10, wherein the shield is made of ferrite.

19. (Previously Presented) The apparatus according to claim 10, further comprising a plastic box, in which the coil and shield are arranged such that they are located at a distance, in the order of centimeters, from an operator's hand, when the operator holds the transmission device during operation.

20. (Currently Amended) A method for wirelessly transferring, in a harmless way, energy from outside a human's or animal's body into the human's or animal's body to an implantable energy consuming medical device when implanted in a human's or animal's body, the method comprising:

implanting in the human or animal a receiver capable of drawing energy from an alternating magnetic field for supplying the energy to the implantable energy consuming medical device,

manually holding, externally to the human's or animal's body a transmission device capable of generating the alternating magnetic field, the transmission device including:

a coil for generating from outside the human's or animal's body the alternating magnetic field for supplying energy to the implantable energy consuming medical device

implanted in the human's or animal's body, the coil extending longitudinally between a front end directed away from a hand holding the transmission device and a rear end facing the hand holding the transmission device,

generating by means of coil included in the transmission device the alternating magnetic field extending up to the implanted receiver, and

shielding by means of a shield the hand holding the transmission device from the alternating magnetic field generated by the coil by surrounding at least a portion of the coil, the shield including a magnetizable core extending inside of the coil of the transmission device and a magnetizable casing integrated with the magnetizable core of the transmission device and surrounding the rear end of the coil and the circumference of the coil along at least a portion of the longitudinal extension of the coil,

wherein the magnetizable casing comprises a circular cylindrical wall and a circular gable wall joined to the cylindrical wall, the magnetizable core extends centrally in the cylindrical wall from the gable wall, and the coil is applied on the magnetizable core with the rear end of the coil facing the gable wall, and

wherein the shield is made of ferrite.

21. (Currently Amended) A method for wirelessly transferring, in a harmless way, energy from outside a human's or animal's body into the human's or animal's body to an implantable energy consuming medical device when implanted in the human's or animal's body, the method comprising the steps of:

implanting in the human's or animal's body a receiver capable of drawing energy from an alternating magnetic field for supplying the energy to the implantable energy consuming medical device,

providing a transmission device external to the human's or animal's body, the transmission device being capable of generating the alternating magnetic field, the transmission device including a coil extending longitudinally between a front end and a rear end,

positioning the transmission device relative to the human's or animal's body so that the front end of the coil is directed towards the receiver and the rear end of the coil is directed away from the implanted receiver,

generating, by means of the transmission device, the alternating magnetic field extending up to the implanted receiver, and

shielding by means of a shield an environment outside of the human's or animal's body from the alternating magnetic field generated by the coil, except at least the front end of the coil, so that the alternating magnetic field extends out of the coil and towards the receiver when the front end of the coil is directed towards the receiver, the shield including a magnetizable core extending inside of the coil and a magnetizable casing integrated with the magnetizable core and surrounding the rear end of the coil and the circumference of the coil along at least a portion of the longitudinal extension of the coil,

wherein the magnetizable casing comprises a circular cylindrical wall and a circular gable wall joined to the cylindrical wall, the magnetizable core extends centrally in the cylindrical wall from the gable wall, and the coil is applied on the magnetizable core with the rear end of the coil facing the gable wall, and

wherein the shield is made of ferrite.

22. (Previously Presented) The transmission device according to claim 4, wherein the coil extends past the magnetizable casing along the longitudinal extension of the coil, as seen in the direction towards the front end of the coil.

23. (Previously Presented) The apparatus according to claim 14, wherein the coil extends past the magnetizable casing along the longitudinal extension of the coil, as seen in the direction towards the front end of the coil.

24. (Previously Presented) The apparatus according to claim 11, wherein for each of the first and second transmitters the magnetizable casing completely surrounds the coil of the respective first or second transmitter except the front end thereof.

25. (Previously Presented) The apparatus according to claim 24, wherein the magnetizable core wholly extends along the longitudinal extension of the coil.

26. (Previously Presented) The apparatus according to claim 11, wherein for each of the first and second transmitters the magnetizable casing surrounds the circumference of the coil along a portion of the longitudinal extension of the coil.

27. (Previously Presented) The apparatus according to claim 26, wherein the magnetizable core extends past the magnetizable casing along the longitudinal extension of the coil, as seen in the direction towards the front end of the coil.

28. (Previously Presented) The apparatus according to claim 26, wherein the coil extends past the magnetizable casing along the longitudinal extension of the coil, as seen in the direction towards the front end of the coil.

29. (Previously Presented) The apparatus according to claim 11, wherein for each of the first and second transmitters the magnetizable casing comprises a circular cylindrical wall and a circular gable wall joined to the cylindrical wall, the magnetizable core extends centrally in the cylindrical wall from the gable wall and the coil is applied on the magnetizable core with the rear end of the coil facing the gable wall.

30. (Previously Presented) The apparatus according to claim 29, wherein the cylindrical wall is provided with cut-outs.

31. (Previously Presented) The apparatus according to claim 11, wherein the shield of each of the first and second transmitters is made of ferrite.

32. (Currently Amended) The apparatus according to claim ~~10~~11, wherein each of the first and second transmitters comprises a plastic box, in which the coil and shield of the respective first or second transmitter are arranged such that they are located at a distance, in the order of centimeters, from an operator's hand, when the operator holds the respective first or second transmitter during operation.

33. (Previously Presented) A method for wirelessly transferring, in a harmless way, energy from outside a human's or animal's body into the human's or animal's body to an implantable energy consuming medical device when implanted in the human's or animal's body, the method comprising the steps of:

implanting in the human's or animal's body a receiver capable of drawing energy from an alternating magnetic field to be supplied to the implantable energy consuming medical device,

generating by a transmitting device outside the human's or animal's body at least two alternating magnetic fields having different directions and extending towards the implanted receiver, and

shielding by means of shields an environment outside the human's or animal's body from the at least two alternating magnetic fields,

wherein the transmission device includes at least two transmitters for generating said at least two alternating magnetic fields, respectively, and the shielding shields environments located outside the human's or animal's body and around said at least two transmitters, and

wherein in the step of shielding, shields for of each said at least two transmitters are used, each of the shields including a magnetizable core extending inside of the coil and a magnetizable casing integrated with the magnetizable core and

surrounding the rear end of the coil and the circumference of the coil along at least a portion of the longitudinal extension of the coil,

the magnetizable casing comprising a circular cylindrical wall and a circular gable wall joined to the cylindrical wall, the magnetizable core extends centrally in the cylindrical wall from the gable wall, and the coil is applied on the magnetizable core with the rear end of the coil facing the gable wall, and

the shield being made of ferrite.

34. (Previously Presented) The method according to claim 33, wherein said at least two transmitter are placed at the surface of the skin of the human's or animal's body and the shielding shields environments located laterally, in directions parallel to the surface of the area of the skin of the human's or animal's body where the respective transmitter is placed.

35. (Currently Amended) The method according to claim 33, wherein each of said at least two transmitters includes a coil extending longitudinally between a front end and a rear end,

in the step of generating said at least two alternating magnetic fields said at least two transmitters are placed at different places of the skin of the human's or animal's body and so that the front end of the coil of each of said at least two transmitters is directed towards the receiver and the rear end of the coil is directed away from the implanted receiver, and

in the step of shielding, environments outside the human's or animal's body are shielded from the alternating magnetic field generated by the coil of the respective one of said at least two transmitters, except at at least the front end of the coil, so that the alternating magnetic field extends out of the coil and towards the receiver when the front end of the coil is directed towards the receiver.

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36. (Cancelled)